

REMARKS

Rejections Under 35 USC §112

Claims 78-82, 87, 88, 90-93 and 96 have been rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter.

In response to the 35 USC §112 rejections independent claims 78, 87 and 92 have been amended. In particular, the amended independent claims include the recitation of:

"the plate, the substrate and the mechanism configured such that the die can be placed on the substrate, the mechanism attached to the plate, and the die retained by the mechanism on the plate in electrical contact with the substrate".

In addition, the amended independent claims state that the contact is "configured to electrically contact a pad on the die".

The added recitations are submitted to more clearly define the relationship of the claimed elements and to satisfy the requirement of 35 USC §112.

The reference to element 77 in the 35 USC §112 rejections appears to be in error as element 77 (z-axis anisotropic conductive material shown in Figure 7) is not being claimed.

Rejections Under 35 USC §103

Claims 78-82, 87, 88, 90-93 and 96 have been rejected under 35 USC 103(a) as being unpatentable over Malhi et al (US Patent No. 5,088,190) or Elder et al. (US Patent No. 5,123,850) in a first set, in view of Nakano (JP Hei 3-69131 in a second set, and Blonder et al (US Patent No. 4,937,653), Bindra et al. (US Patent No. 5,137,461) or Anschel et al. (US Patent No. 5,420,520) in a third set.

Claims 78-82, 87, 88, 90-93 and 96 have further been rejected under 35 USC 103(a) as being unpatentable over Nakano in a first set, in view of Blonder et al (US Patent No. 4,937,653), Bindra et al. (US Patent No. 5,137,461) and Anschel et al. (US Patent No. 5,420,520) in a second set.

The 35 USC §103 rejections based on Anschel et al. are traversed based on the priority date of the present application being prior to the priority date of the Anschel et al. reference. In particular Anschel et al. has a priority date of June 11, 1993. On the other hand, the present application is a continuation of application serial no. 08/073,003 having a priority date of June 7, 1993, and is a continuation-in-part of application serial no. 07/709,858 having a priority date of June 4, 1991 (see filing receipt dated April 7, 1997). Thus even if the priority date of June 4, 1991 is not applicable for all of the presently claimed features, all of the claimed features have a priority date of at least June 7, 1993, which precedes the priority date of Anschel et al.

The 35 USC §103 rejections are traversed for essentially the same reasons advanced in the previous Amendments. Specifically, the prior art does not teach a penetration limiting contact, as presently claimed, in which a penetration force is substantially less than the force with which a bond pad is damaged. This concept is explained on page 17, line 17, to page 18, line 15 of the specification.

Again Applicants would argue that the prior art does not suggest the claimed relationship of contact structure to biasing force. In addition, the prior art does not suggest the penetration force being from 2 to 10 times less than the biasing force as claimed in independent claims 87 and 92.

With respect to the biasing force feature, the Office Action states that:

"The range of biasing forces are not claimed as argued and even if they were the use of proper force would be considered as obvious. The first and second force arguments relate to material considered inherent in Nakano".

In response to this assertion, Applicants direct the Examiner's attention to claims 87 and 92 wherein the biasing force range is claimed. In addition, Applicants respectfully request a location in the Nakano reference where the presently claimed range is taught.

Also with respect to the biasing force feature the Office Action states:

"The examiner continues to contend that one skilled in the art would apply a force sufficient to make contact but not so great as to destroy the device under test."

However, in actual semiconductor testing the performance of a testing apparatus is not as black and white. The bond pads on semiconductor dice are only about 1 μ m thick. The bond pads can be cosmetically and functionally damaged without destroying the device under test. In addition, electrical contact can be made to the bond pads, but with excessive resistance that can adversely affect the characterization of the device under test.

The presently claimed test apparatus improves the test process by insuring low resistance electrical connections but with minimal damage to the bond pads. The Examiner is thus asked to assess obviousness in light of the improvements to the test process, and from the view point of one skilled in the art at the time of the present invention.

In view of the amendments and arguments, it is submitted that amended claims 78-82, 87, 88, 90-93 and 96 are now in a condition for allowance. Should any other issues remain, it is requested that the Examiner contact the undersigned attorney.

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